

EXHIBIT 12



Supplier of Quality

LIQUID PAINT & POWDER COATING SYSTEMS

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Powder Coating System

Proposal No. 18038H

January 14, 2019

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For:

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New Bremen, Ohio



January 14, 2019

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INTRODUCTION

Pneu-Mech Systems Mfg. LLC is very pleased to provide the attached complete proposal for the detailed equipment and services. The proposed package utilizes our unique blend of talent, which spans Process Engineering, Paint Shop Planning, Detailed Design/Engineering, Supply/Subcontract Management, Fabrication, Retrofits, Relocations, Installation and overall Project Management. Our team has developed a proven comprehensive package that has provided customers with the highest possible quality at the lowest possible price for over 27 years.

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SYSTEM DESIGN CRITERIA

Largest Part Size:	8'-0" W x 11'-0" H x 26'-0" L
Profile Opening:	9'-0" W x 12'-0" H
Individual Carrier Length	13'-6"
Top of Conveyor to Top of Opening:	5'-9"
Top of Conveyor to Top of Part:	6'-3"
Design Line Speed:	10.5 FPM (Variable)
Carriers Per Hour:	37 (Short) or 15 (Long)
Weight per Carrier:	7,500 lbs.
Throughput: lbs / hr	127,700
Coating:	Powder
Insurance Carrier:	FM
Electrical:	460 Volts, 3 Phase, 60 Cycle
Type Gas:	Natural Gas @ 5 PSI
Water Supply:	City Water
Make-Up Air:	120,000 cfm (by others)

For Reference Only: Direct Fired Make up Air Heater
120,000 CFM at up to 0.75 ESP – 75 HP ODP motor – 460-3-60.
70° F. Temperature rise with 5-PSI Natural gas inlet.
Horizontal design with down discharge outlet arranged for **outdoor** mounting.
Includes the following standard and optional equipment.
G-90 Galvanized casing with support frame for curb mounting
Fresh air intake hood with bird screen.
18" high flat built up roof curb kit.
ETL listed. (ANSI Z83.41999 / CSA 3.7 M99 standards).
Remote Summer-Winter-Off Selector switch.
Pre-Piped, Pre-Wired and factory tested.



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Insulated blower section. Hinged and gasketed service doors.
Non-Fused door interlock disconnect switch.
DWDI forward curved industrial blowers with solid shaft.
FM approved gas train and controls suitable for up to 5-PSI inlet gas pressure.
Fully modulating gas burner with duct discharge air controller.
V-Bank filter section with 2" linked panel filters.
Motorized 2-position discharge dampers with motorized actuator.
High gas pressure switch and low fire start with interrupted ignition.
Discharge ductwork by others.

Notes: Only those specifications set forth in this document are considered part of Pneu-Mech Systems proposal. This equipment shall be designed in accordance with accepted industry standards employing the latest available technology.

*Further modifications and design changes may be incorporated by Pneu-Mech Systems during the final engineering stages to produce the best equipment possible. **Note: No changes will be made without written approval from Crown Equipment.***

Changes made to the scope of work from the previous proposal are:

- Added in options (RO & Ph Systems, powder booth installation, two down draft booths)
- Washer stage times have changed.
- Heat Dissipation Tunnels now have insulated panels.
- Conveyor price change.
- Ceiling hung conveyor supports are now priced (floor supports were priced before).
- IR Oven pricing.
- Lowerator quantity and costs.
- Revised IR and cure oven designs, removed protection tunnels.
- Removed E-Room.

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SCOPE OF WORK

1 PRICING

Pneu-Mech Systems will provide the following products and services:

Machinery:

• Nine Stage Stainless Steel Split Top Washer -----	\$ 1,640,927.00
• High Velocity Blow-Off System w/ S.S. Enclosure and Vacuum Platform w/ Vacuum -----	\$ 108,464.00
• Gas Fired Convection Dry-Off Oven -----	\$ 1,271,221.00
• Heat Dissipation Tunnel for Dry-Off Oven -----	\$ 356,384.00
• Masking Platform -----	\$ 78,395.00
• Part Inspection Station Platform -----	\$ 88,043.00
• Gas Catalytic Infrared Booster Oven -----	\$ 897,658.00
• Gas Fired Convection Cure Oven -----	\$ 1,783,896.00
• Heat Dissipation Tunnel for Cure Oven -----	\$ 381,481.00
• Power & Free Overhead Conveyor System -----	\$ 6,199,006.00
• Smart Eye System -----	\$ 52,331.00
• Crash Protection -----	\$ 55,687.00
• Mechanical and Electrical Installation of Six Fanuc Robots ----	\$ 191,370.00
• 25 GPM Reverse Osmosis System -----	\$ 66,114.00
• Ph Balance System w/ Environmental Package -----	\$ 53,015.00
• Two (2) Side Down Draft Paint Production Spray Booths with Controls and Make-Up Air Units -----	\$ 394,694.00
• Installation for Four (4) Powder Booths -----	\$ 115,003.00
• Installation Package, Electrical Distribution Wiring, Project Management and Start-Up and Training -----	\$ 1,703,480.00
• PLC Controls -----	Included

Total Purchase Price ----- \$ 15,437,169.00

Total If Purchased by January 22, 2019 ----- \$ 15,125,000.00

Note: This price is available based on timed negotiated terms with suppliers

**Potential price increase if order not placed until April, 2019, not to exceed 3%
of total purchase price.**

CANCELLATION:

Crown Equipment has the right to cancel the contract at any point in the process.

**Pneu-Mech Systems would invoice for all documented costs and expenses with reasonable
profit incurred to the termination point of the contract.**



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NOTE: The above prices are exclusive of country, State, VAT and/or Local Taxes. The shipping destination country, state, VAT and/or local taxes are the buyer's responsibility. Pneu-Mech Systems may be obligated to collect these from the buyer and distribute to the appropriate government agency unless the buyer sends a properly completed exemption certificate from destination point with their purchase order.

- *Because of current volatility of raw material costs, Pneu-Mech Systems reserves the right to adjust prices at any time prior to confirmation of purchase order receipt.*

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2 9-STAGE SPLIT TOP WASHER

2.1 Washer Dimensions

Vestibules	14'-6"
Canopy	11'-0" wide x 14'-6" high x 196'-0" length
Overall	13'-6" wide x 18'-2" high x 196'-0" long
Floor to Bottom of Part Opening	3'-6"

	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6	Stage 7	Stage 8	Stage 9
Process	Prewash	Alk. Clean	Rinse	RO Rinse	Acid	Rinse	Zirc	Rinse	Seal
Process Temp.	130 F	140 F	Ambient	Ambient	Ambient	Ambient	90 F	Ambient	Ambient
Process Time	30 sec	90 sec	30 sec	30 sec	90 sec	30 sec	60 sec	30 sec	30 sec
Stage Length	6'-0"	16'-0"	6'-0"	6'-0"	16'-0"	6'-0"	11'-0"	6'-0"	6'-0"
Riser Pairs	7	17	7	7	17	7	12	7	7
Riser Spacing	12"	12"	12"	12"	12"	12"	12"	12"	12"
Nozzles	238	578	238	238	578	238	408	238	238
PSI	20	15	15	15	10	10	10	10	10
Nozzle GPM Rate	3.5	3.1	3.1	3.1	2.5	2.5	2.5	2.5	2.5
Drain Length	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	14'-6"
Housing Material	304 SS	304 SS	304 SS	304 SS	316L SS	316L SS	304 SS	304 SS	304 SS
Tank Capacity	2,600	5,650	1,900	1,900	3,700	1,500	3,190	1,500	1,500
Burner	3.0 MBTU	7.5 MBTU	N/A	N/A	N/A	N/A	2.0 MBTU	N/A	N/A
Pump GPM	833	1,792	738	738	1,445	595	1,020	595	595
Pump HP	25	(2) 25	20	20	(2) 20	10	(2) 10	10	10
Pump Construction	SS Fitted	SS Fitted	SS Fitted	SS Fitted	SS Wetted	SS Wetted	SS Fitted	SS Fitted	SS Fitted
Misting Risers	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bottom Spray	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

2.2 Washer Exhaust Fan Data (2 provided)

CFM Rate	19,800 ea.
Motor Horsepower	15 hp ea.

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2.3 Pneu-Mech Washer General Design Features

- 2.3.1 The heavy-duty washer has design features to minimize maintenance and increase machine life. Extra heavy silhouettes stiffen and support the sides and roof of the washer. Washer roof to be sloped.
- 2.3.2 Washer housing will be split top design with the conveyor installed above the washer housing.
- 2.3.3 An adjustable pant leg assembly is located at the entrance and exit of all washers to adjust exhaust air flow to minimize steam loss.
- 2.3.4 Automatic shutdown for pumps when no parts are present in the washer, this feature programmable.

2.4 Washer Housing

- 2.4.1 Walls, Roof and Silhouettes are fabricated from 10 ga. 304 stainless steel.
- 2.4.2 Stages 1, 2 and 7 housings to be insulated and sheathed with 20 ga. 304 Stainless Steel Sheet.
- 2.4.3 Drain Pans are fabricated from 10 ga. 304 Stainless Steel Sheet.
- 2.4.4 Stages 5 and 6 Walls, Roof and Silhouettes are fabricated from 10-gauge 316L Stainless Steel Sheet.
- 2.4.5 Stages 5 and 6 Drain Pans are fabricated from 10-gauge 316L Stainless Steel Sheet.
- 2.4.6 Provide a fiberglass grating personnel platform throughout the washer for riser and nozzle maintenance. A stainless steel safety plate will be placed on each side of the grating inside the spray stages for safety.

2.5 Doors

- 2.5.1 Hinged and gasketed access doors between each spray stage will be furnished.
- 2.5.2 Doors are complete with cross brace reinforcement for rigidity and cam locking safety latches that allow a tight sealing door.
- 2.5.3 A weep trough is furnished under each door.
- 2.5.4 An access platform with stairs will be provided for each door.

2.6 Lights

- 2.6.1 LED lights will be located in the roof of the washer on each side of the conveyor shroud approximately every 10' throughout the length of the washer.

2.7 Structural Supports

- 2.7.1 Internal structural support members designed for supporting the canopy, tanks, drain pans and conveyor load will be installed through the washer. Applicable supports will come with one coat of gray paint.

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2.8 Tank Capacities

- 2.8.1 All heated stage tank capacities are designed for a minimum of 3 times the pump GPM volume, while non-heated stage tank capacities are designed for a minimum of 2.5 times the pump GPM volume.

2.9 Solution Tanks

- 2.9.1 Stages 1 thru 4 and 7 thru 9 tanks are fabricated from 3/16" 304 Stainless Steel Plate.
- 2.9.2 Stages 5 and 6 Tanks will be fabricated from 3/16" 316L Stainless Steel Plate.
- 2.9.3 Tanks welded water tight and tested.
- 2.9.4 Tank bottoms pitched toward charge box with drain connection at low point.

2.10 Insulated Tanks and Heat Baffles

- 2.10.1 Stages 1, 2 & 7 tanks will be insulated with a 1" type fiber insulation board sheathed with a 20 gauge stainless steel skin.
- 2.10.2 Stainless Steel Baffles are installed in all heated stages over the open tanks to minimize evaporation and control steam.

2.11 Skimming Overflow Assembly

- 2.11.1 Overflow gutter will be positioned along the length of the screened area.
- 2.11.2 1 1/2" Ø overflow connection furnished.
- 2.11.3 Drain assembly will be a 3" valve fitted to the sump in the bottom of each tank.
- 2.11.4 1 1/2" Ø overflow piping will connect down stream of the drain valve.
- 2.11.5 Stage #1 will be equipped with a Smart Skim System.

2.12 Quickfill Assembly

- 2.12.1 1 1/2" Ø gate valve with necessary manifold will be supplied. Appropriate stages to be able to add virgin RO water from day tank.

2.13 Electronic Water Level Controller

- 2.13.1 The Effector Electronic Level Sensor Control is supplied for the automatic fluid control of the washer tanks. The level control is equipped with dual signal outputs. This type of controller is especially effective since it allows for the effects of the pump on level adjustment before make – up water is added. Make – up water is automatically added via a solenoid-operated valve receiving its signal from the programmable Logic Controller. The dual signal indicates water “High” level (overflow) or sensor failure, water “Low” level (firing tube protection) and Start and Stop Make-Up water solenoid control. There are no moving parts to get stuck and the polypropylene housing is impervious to corrosion or acid attack. The highly visible numeric display indicates current fluid level. Unit is easily programmable for changing operating parameters.

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2.14 Riser & Header Piping

- 2.14.1 Parts are to be positioned so that the sections to be cleaned receive the full action of the spray nozzles, which are located on both sides of the tunnel opening and allow the parts to drain readily.
- 2.14.2 Suction and discharge piping fabricated from schedule 80 CPVC piping and fittings.
- 2.14.3 Header piping to be 80 CPVC piping and fittings.
- 2.14.4 Headers are designed for self-draining during shut down.
- 2.14.5 Quick Disconnect Riser piping in all stages 1, 3, 4, 7, 8 & 9 to be 80 CPVC piping and fittings. Stages 2, 5 & 6 to be 304 Stainless Steel Piping.
- 2.14.6 Spray risers are positioned 12" on center, parallel to the conveyor to sufficiently flood the product zone.
- 2.14.7 All nozzles are mounted in a staggered pattern on special removable swivel sockets for maximum spray pattern adjustment. Note: 365 degree coverage of parts.
- 2.14.8 Furnish Uni-Spray Clip Eyelet Spray Nozzles clamp on design furnished on all stages.
- 2.14.9 Spray Nozzles have the Quick Disconnect Spray Tip which saves maintenance time in cleaning and replacing nozzles tips.

2.15 Screens

- 2.15.1 Double solution screens fabricated from #4 and #6 Stainless Steel Mesh encased in a rigid formed Stainless Steel Frame with handle.
- 2.15.2 Screens located across the tank extension between main solution and pump intake sections.
- 2.15.3 Screen area designed to handle 100 gallons per minute per square foot of screen.

2.16 Pumps

- 2.16.1 Kerr Pumps, centrifugal type, vertically mounted with a semi-open impeller design.
- 2.16.2 Pump will have a "C" face, 1800 RPM, coupling connected Motor with a TEFC construction with heavy cast bearing frame above the tank.
- 2.16.3 Each pump motor will include a VFD in the NEMA 12 Control Panel Enclosure.
- 2.16.4 Bearings are protected from fluid and vapors by a cover plate and vapor seal.
- 2.16.5 Each pump will have a 24" spool pull out section to allow maintenance to be performed without draining the tank.

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2.17 Tank Covers

- 2.17.1 Hinged water seal type Stainless Steel tank covers furnished to provide access to the interior of the screen chamber. Cover to include latches to hold cover in the open position.
- 2.17.2 Tank cover frame and fittings fabricated of formed 12 gauge Stainless Steel.

2.18 Pump Throttle Valves

- 2.18.1 A lug type Butterfly Valve located between the pump discharge and the distribution manifold controls each pump discharge.
- 2.18.2 Liquid filled pressure gauges isolated from liquid surge to be located in the pump discharge piping on each stage with a NPT Tee for testing purposes.

2.19 Exhaust System

- 2.19.1 Both entrance and exit of the washer is equipped with a capture hood with epoxy coated tube axial exhaust fans with 18 ga. galvanized exhaust stacks.

2.20 Access Platforms

- 2.20.1 Pneu-Mech Systems to design, fabricate and install two (2) access platforms with ladder and guard rail to access the two exhaust fans. Platforms to be designed for a 300 lb per sq. ft. load.

2.21 Gas Burner Heating System

- 2.21.1 Efficiencies are approximately 80% to minimize tank sizes and burner tube diameter.
- 2.21.2 Gas manifolds completely equipped to meet latest FM requirements.
- 2.21.3 Heat exchangers are fabricated using schedule 40 tube and schedule 10 tube. Schedule 40 is used in the first pass followed by schedule 10 tube because that is where the hottest temperature is located.
- 2.21.4 Heat exchangers are fabricated using a 180° long radius elbow for the first elbow and short radius elbows throughout the rest of the exchanger. The use of the long radius elbow ensures that the heated air has ample room to get out of the first section of tube which prolongs the heat exchangers life.
- 2.21.5 Each heated stage will have a low water cut-off to the burner to keep from having a firing tube burn out.
 - The number one reason for Heat Exchanger Failure is sludge build up around the serpentine tube. This build up prohibits the 360° heat release that the tube is designed for, thus causing the tube to burn through, flooding the tube interior.
 - **NOTE: All gas trains must have a 5 PSI of gas pressure to each gas train for proper operation.**

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2.22 Bag Filtration System

Stage 2 will have two stainless steel bag filter vessels to filter 100% of process solution prior to entering nozzles. Each vessel will hold (4) #2 50 micron filters and have a stainless steel basket strainer. Stainless steel piping will be used. Magnetic separators will be used on stage #2 filtration.

Stage 1 will utilize a 100 gpm side stream bag filtration system.

Stage 1 & 2 will utilize and eductor system.

3 HIGH VELOCITY BLOW-OFF SYSTEM W/ S.S. ENCLOSURE, VACUUM PLATFORM AND VACUUM SYSTEM

Pneu-Mech Systems to provide materials and field labor to install one (1) high velocity blow-off system (with VFD) with sheet metal enclosure. Blow-off system to include the following:

- Air Force 1 Blower, powder coated steel housing, base and wheel for chemical resistance, low maintenance direct drive design with a 20-hp, 3600 rpm, 3 phase, 60-Hz, 230/460vac TEFC, premium efficiency (EISA Compliant) Ultraline motor.
- Air Force 1 Blower Sound Enclosure, custom fabricated to fit MS series blower, galvanized steel walled with acoustical lined casing and baffle design for sound attenuation. Complete with panel style filtration, magnehelic gauge and service access door.
- Distribution Plenum, galvanized steel construction with flex hose outlets. Plenum is to be coupled to the blower outlet via duct connection.
- Air Force 1 Side Air Knives with full length, laminar flow, adjustable slot, flanged ends for easy mounting and targeting, all hardware (including set springs), center feed inlet, anodized extruded aluminum body and powder coated cast aluminum ends for added corrosion and pitting resistance.
- Support Collars, flanged bracket used for mounting the Air Knife to machinery structure or support grid pipe, complete with hardware.

The enclosure is fabricated from 18 ga. 304 stainless steel, includes one (1) personnel door with panic latch and one (1) 4-tube light fixture.

Pneu-Mech Systems to design, fabricate and install one (1) 18'-0" wide x 40'-0" long vacuum platform after the washer blow-off, platform comes complete with stairs, LED Lighting, guard rails, drip pan and vacuum system. Platform to be designed for a 300 lb per sq. ft. load.

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4 GAS FIRED CONVECTION DRY-OFF OVEN

4.1 Design Data

Minutes in Oven	30.0 minutes
Air Changes in Oven	3.33 per minute
Design Temperature	400° F
Burner Size	(7) Maxon 435 Ovenpak 87,000-3,850,000 BTUs
Operating Btu's Hr	19.8 mbtu
Air Seals	(4) four
Oven Width	25'-6"
Oven Length	174'-0"
Oven Height	22'-6"
Insulated Floor	Yes

4.2 Circulation Fan Data

Quantity	(7) eight
CFM Rate	275,227 total
Static Pressure	3.5"
Motor Horsepower	(7) 60 hp
Plug Fan Size	(7) BFPL-441

4.3 Exhaust System Data

Quantity	(1) one
Purge cfm Rate	26,622
Purge Time	15 minutes
Exhaust cfm Rate	13,777
Static Pressure	0.5"
Motor Horsepower	20 hp

4.4 Powered Air Seal Data

Quantity	(4) four
CFM Rate	5,000 cfm
Velocity Rate	2,000 fpm
Motor Horsepower	11 hp
Gravity Hoods	(2) two

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4.5 Oven Construction

- 4.5.1 The oven shell (walls and roof) will be constructed of dual 20 gauge aluminized steel panels with 6" thick, 6-pound density, mineral wool industrial insulation.
- 4.5.2 The oven floor will be constructed of dual 20 gauge aluminized steel panels with 4" thick, 6-pound density, mineral wool industrial insulation.
- 4.5.3 The insulation, when installed into a 6" x 27" panel, will be firmly held to prevent settling, thus avoiding an uninsulated space at the top of the panels. This type of panel construction provides great rigidity and allows a minimum of heat loss through panel.
- 4.5.4 The panel joints are filled with strip insulation and all corners will be covered by a trim strip for safety and provide a suitable appearance.
- 4.5.5 Structural steel is included, where required for support of oven, conveyor and fans.
- 4.5.6 Four (4) insulated personnel doors with Brixon Safety Latch will be provided.
 - **NOTE:** Oven is designed for explosion relief per NFPA 83

4.6 Circulation Fan

- 4.6.1 The oven will be supplied with a High Efficiency Plug Circulation Fan complete with a 6" thick insulated plug.
- 4.6.2 The bearings, motor and V-belt drives will be mounted outside the oven.

4.7 Burner Box and Distribution Ductwork

- 4.7.1 The Plug Fan is installed in a Burner Box fabricated from 10 gauge hot rolled plate on the inside and the outside is covered with 20 ga steel over mineral wool insulation.
- 4.7.2 The Burner Box is insulated using 6" thick, 6 pound density mineral wool industrial insulation.
- 4.7.3 The Burner Box includes one (1) insulated access door for maintenance of the fan and burner.
- 4.7.4 The oven includes a supply distribution plenum connected to the discharge of the burner box. This plenum has high pressure jet nozzles to provide a constant velocity of air to maximize drying.
- 4.7.5 Ductwork is hinged for cleaning.
- 4.7.6 Return air intake is will utilize high temperature return air filtration.

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4.8 Heater Low NOx (Gas)

- 4.8.1 Low NOx Maxon OvenPak Burner System with the following equipment:
- Maxon OvenPak Burner, 460-3-60, 3/4 HP Motor, with U.V Scanner and Ignitor
 - 3/4" Pilot Style Gas Train (natural gas) for 5 psi inlet pressure with shutoff cocks, regulators, gas pressure switches, motorized main gas valves (with proof of closure switches), low gas pressure trim regulator, pre-assembled with nipples and unions. FM approved.
 - **NOTE:** All gas trains must have a 5 PSI of gas pressure delivered to each gas train for proper operation.

4.9 Burner Control System

- Honeywell 7800 Series Flame Safety
- 6000 Volt Ignition Transformer.
- Modulating Control Motor M7284A 4:20 MA Honeywell
- Honeywell UDC 1200 Limit Controller
- Air Flow Switches on exhaust and combustion blower
- PLC (PID Loop) Temperature Controller
- JMS - Southeast fast acting type "J" Thermocouple

4.10 Exhaust System

- 4.10.1 The oven will be supplied with a Centrifugal Exhaust Fan designed to purge and remove by-products from the oven. The external bearings are protected from the heated air stream.
- 4.10.2 The fan will be mounted on the oven roof on a structural steel support frame.
- 4.10.3 The exhaust fan includes elbow, transition, 20'-0" of exhaust stack, roof collar with flashing and a stack termination cap.
- **Note:** The oven exhaust fan includes a Belimo two position actuator. Once the oven has completed the purge cycle, the actuator will slow exhaust fan reducing the exhausted CFM's.

4.11 Access Platforms

- 4.11.1 Pneu-Mech Systems to design, fabricate and install three (3) access platforms with ladder and guard rail to access the air seal and exhaust fans. Platforms to be designed for a 300 lb per sq. ft. load.

4.12 Gravity Hoods

- 4.12.1 Fabricate and install two (2) vestibules with gravity hood at oven openings, 80' total of exhaust stack, roof collars with flashing.

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4.13 Powered Air Seals

- 4.13.1 Fabricate and install four (4) powered air seal enclosures, two each at the product entry and exit of the oven.
- 4.13.2 Each air seal will be installed in an insulated panel enclosure with two (2) product opening designed to reduce heat escaping the oven. Each air seal is designed with a Plug Fan which captures the air in the enclosure and circulates it into a duct surrounding the outer product opening. The ductwork is designed with adjustable air orifice to provide a pressurized airstream to create a seal inside the enclosure, reducing the amount of heat escaping.

5 HEAT DISSIPATION TUNNEL for DRY-OFF OVEN

Design, fabricate and install one (1) Pressurized Heat Evacuation Tunnel with ambient air designed to release heat from product.

5.1 Design Data

Time in Tunnel	15 minutes
Tunnel Dimensions	22'-0" wide x 100'-0" long x 22'-0" high
Lights	(30)
Access Door	(3)

5.2 Material Specification

- 5.2.1 Tunnel shell and plenum to be fabricated from 3" thick dual skin insulated panels.
- 5.2.2 All ductwork to be fabricated from 18 gauge galvanized metal.

5.3 Construction Data

- 5.3.1 Diverter panels will be installed inside the tunnel approximately 10'-0" apart to add turbulence to the air.
- 5.3.2 Structural steel is included, where required for support of tunnel roof, conveyor and fans.

5.4 System Data

- 5.4.1 The tunnel will be supplied with a 60" Vane Axial Fan designed to pressurize the tunnel for cleanliness.
- 5.4.2 The pressurization will be from the Vane Axial fan mounted on a bridge type supply plenum to introduce air thru filters on both sides of the product.
- 5.4.3 There will be a summer / winter mixing box after the fan to direct the air either inside or outside the plant on the supply and exhaust ends.
- 5.4.4 The tunnel will be supplied with a 60" Vane Axial Exhaust Fan designed to remove by-products. The airflow will be counter to the product flow (pressurization at the exit and exhaust at the entrance). Exhaust rate will be 10%

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greater than pressurization. The velocity will be approximately 200 fpm past the product.

5.4.5 There will be a summer / winter mixing box after the fan to direct the air either inside or outside the plant.

5.4.6 The exhaust and supply fans include elbow, transition, 20'-0" of exhaust stack each, roof collar with flashing, a stack termination cap and intake hood.

5.5 Pressurization / Exhaust System Data

Pressurization		Exhaust	
Quantity	(1) one	Quantity	(1) one
cfm Rate	96,800	cfm Rate	106,480
Static Pressure	0.5"	Static Pressure	0.5"
Motor Horsepower	20 hp	Motor Horsepower	20 hp

5.6 Access Platforms

5.6.1 Pneu-Mech Systems to design, fabricate and install two (2) access platforms with ladder and guard rail to access the two fans. Platforms to be designed for a 300 lb per sq. ft. load.

6 MASKING PLATFORM

Pneu-Mech Systems to design, fabricate and install one (1) 27'-0" wide x 40'-0" long platform with steel decking, LED lighting, stairs and guard rail. Platform to be designed for a 300 lb per sq. ft. load.

7 PART INSPECTION STATION PLATFORM

Pneu-Mech Systems to design, fabricate and install one (1) 24'-0" wide x 55'-0" long platform with steel decking, LED lighting, stairs and guard rail. Platform to be designed for a 300 lb per sq. ft. load.

8 GAS CATALYTIC INFRARED BOOSTER OVEN

Pneu-Mech Systems to provide materials, field labor and equipment to install one (1) Gas Catalytic Infrared Oven.

Pneu-Mech proposes the following 75' long, floor mounted straight line Vulcan gas catalytic infrared heated oven with a 7.5' vestibule up front for an overall length of 82.5', designed for a 8'W x 11'T maximum part / 9'W x 12'T part window.

The Catalytic oven is modular in design with 10 of our 7.5' long fully reflective sheet metal sections placed end to end and bolted together. The first 4 sections will be our 12-D concentrated heater configuration (21-heaters) followed by 6 sections using our 15 heater "Halo"

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configuration, all pre-wired with junction boxes, and pre-plumbed with unions to provide complete ease of final field installation. The oven will have a top-hat type hood system; designed to straddle the overhead and will have an 8" exhaust hole for each 7.5' heated section plus one in each vestibule.

OVEN CONSTRUCTION

- ☐ Premium 18 gauge galvanized steel
Exterior powder coated
- ☐ Precision CNC pre-punched holes on 6" centers
- ☐ Heavy duty base
- ☐ Nut and bolt assembly

REFLECTORS

Additional reflectors will be provided for bottom of oven

EXHAUST HOOD

- ☐ 8" Diameter take-off per 7.5' section

EXHAUST DUCT

- ☐ Exhaust ductwork above hood & Fan NOT included

MISCELLANEOUS

- ☐ All necessary hardware is included
- ☐ Components labeled and identified for ease of installation

Qty	Description of Heaters & Controls for 82.5' Oven
174	16" x 60" Panel Heaters with Thermo-switch Safety interlock 4 groups of 21 heaters 12-D followed by 6 halos of 15 heaters all wrapping around the part window. (480V pre-heat for 20 minutes of start-up)
1	UL Approved 480V Control Panel with a PLC based 6" Allen Bradley Panel View Plus HMI Touch Screen control for 34 individual 20-100% output controls / a 34 heat zone oven system. This allows part temperature control from top to bottom as well as entrance to exit for maximum heat transfer efficiency and operating cost savings. Automatic stand-by / low fire tied to conveyor operation.

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High Temperature limits Circuit with t/c and air flow pressure switch included for field installation by customer. Exhaust motor starter for customer supplied fan.

- 2 2.5" NFPA Designed Siemens Gas Train 120V
Includes a high-pressure regulator for 5psi inlet
- 50 Gas Pulse System Zone Controls 120V
Wired right and left of conveyor for 34 zone outputs

Gas load @ 100%: - 8,038,800Btu's input / required @ 10-12" W.C.

9 GAS FIRED CONVECTION CURE OVEN

9.1 Design Data

Minutes in Oven	45.0 minutes short part, 60 min. long part
Air Changes in Oven	3.33 per minute
Design Temperature	500° F
Burner Size	(10) Maxon 425 Ovenpak 60,000-2,750,000 BTUs
Operating Btu's Hr	24.9 mbtu
Air Seals	(2) two powered, (2) two gravity
Oven Width	26'-0"
Oven Length	265'-0"
Oven Height	22'-6"
Insulated Floor	Yes

9.2 Circulation Fan Data

Quantity	(10) ten
CFM Rate	394,285 total
Static Pressure	3.5"
Motor Horsepower	(10) 60 hp w/ soft start
Plug Fan Size	(9) BFPL-441 / (1) BFPL-391
Dist. Ductwork Location	Floor

9.3 Exhaust System Data

Quantity	(2) two
Purge cfm Rate	38,160 / 17,160
Purge Time	15 minutes

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Exhaust cfm Rate	14,454
Static Pressure	0.5"
Motor Horsepower	(2) 15 hp

9.4 Powered Air Seal Data

Quantity	(2) two
CFM Rate	5,000 cfm
Motor Horsepower	11 hp
Velocity Rate	2,000 fpm
Gravity Hoods	Two (2)

9.5 Oven Construction

- 9.5.1 The oven shell (walls and roof) will be constructed of dual 20 gauge aluminized steel panels with 6" thick, 6-pound density, mineral wool industrial insulation.
- 9.5.2 The oven floor will be constructed of dual 20 gauge aluminized steel panels with 4" thick, 6-pound density, mineral wool industrial insulation.
- 9.5.3 The insulation, when installed into a 6" thick x 27" wide panel, will be firmly secured to prevent settling and avoiding an uninsulated space at the top of the panels. This type of panel construction provides great rigidity and allows a minimum of heat loss through panel.
- 9.5.4 The panel joints are filled with strip insulation and all corners will be covered by a trim strip for safety and provide a suitable appearance.
- 9.5.5 Structural steel is included, where required to support of oven, conveyor and fans.
- 9.5.6 Five (5) insulated personnel doors with Brixon Safety Latch will be provided.

- **NOTE: Oven is designed for explosion relief per NFPA 83**

9.6 Circulation Fan

- 9.6.1 The oven will be supplied with a High Efficiency Plug Circulation Fan complete with a 6" thick insulated plug.
- 9.6.2 The bearings, motor and V-belt drives will be mounted outside the oven.

9.7 Burner Box and Distribution Ductwork

- 9.7.1 The Plug Fan is installed in a Burner Box fabricated from 10 gauge hot rolled plate on the inside and the outside is covered with 20 ga steel over mineral wool insulation.
- 9.7.2 The Burner Box is insulated using 6" thick, 6 pound density mineral wool industrial insulation.
- 9.7.3 The Burner Box includes one (1) insulated access door for maintenance of the fan and burner.

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- 9.7.4 The oven includes supply distribution ductwork connected to the discharge of the burner box. This ductwork uses adjustable blades to provide a constant velocity of air to maximize curing.
- 9.7.5 Ductwork is hinged for cleaning.
- 9.7.6 Return air will utilize high temperature air filtration.

9.8 Heater Low Nox (Gas)

- Low NOx Maxon OvenPak Burner, 460-3-60, 3/4 HP Motor, with U.V. Scanner and Ignitor
- 3/4" Pilot Style Gas Train (natural gas) with shutoff cocks, regulators, gas pressure switches, motorized main gas valves (w\ proof of closure switches), low gas pressure trim regulator, pre-assembled with nipples & unions. FM approved.
- **NOTE:** All gas trains must have 5 PSI of gas pressure delivered to each gas train for proper operation.

9.9 Burner Control System

- Honeywell 7800 Series Flame Safety
- 6000 Volt Ignition Transformer.
- Modulating Control Motor M7284A 4:20 MA Honeywell
- Honeywell UDC 1200 Limit Controller
- Air Flow Switches on exhaust and combustion blower
- PLC (PID Loop) Temperature Controller
- JMS - Southeast fast acting type "J" Thermocouple

9.10 Exhaust System

- 9.10.1 The oven will be supplied with a Centrifugal Exhaust Fan designed to purge and remove by-products from the oven. The external bearings are protected from the heated air stream. The fan will be mounted on the oven roof on a structural steel support frame.
- 9.10.2 The exhaust fan includes elbow, transition, 20'-0" of exhaust stack, roof collar with flashing and a stack termination cap.
 - **Note:** The oven exhaust fan includes a Belimo two position actuator. Once the oven has completed the purge cycle, the actuator will slow exhaust fan reducing the exhausted CFM's.

9.11 Access Platforms

- 9.11.1 Pneu-Mech Systems to design, fabricate and install three (3) access platforms with ladder and guard rail to access the air seal and exhaust fans. Platforms to be designed for a 300 lb per sq. ft. load.

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9.12 Gravity Hoods

- 9.12.1 Fabricate and install two (2) vestibules with gravity hood, 80' total of exhaust stack, roof collars with flashing.

9.13 Powered Air Seal

- 9.13.1 Fabricate and install two (2) powered air seal enclosures at the product exit of the oven. The air seal will be installed in an insulated panel enclosure with two (2) product opening designed to reduce heat escaping the oven. Each air seal is designed with a Plug Fan, which captures the air in the enclosure and circulates it into a duct surrounding the outer product opening. The ductwork is designed with adjustable air orifice to provide a pressurized airstream to create a seal inside the enclosure, reducing the amount of heat escaping.

10 HEAT DISSIPATION TUNNEL for CURE OVEN

Design, fabricate and install one (1) Pressurized Heat Evacuation Tunnel with ambient air designed to release heat from product.

10.1 Design Data

Time in Tunnel	20 minutes
Tunnel Dimensions	10'-0" wide x 206'-0" long x 22'-0" high
Lights	(38)
Access Door	(3)

10.2 Material Specification

- 10.2.1 Tunnel shell and plenum to be fabricated from 3" thick dual skin insulated panels.
- 10.2.2 All ductwork to be fabricated from 18 gauge galvanized metal.

10.3 Construction Data

- 10.3.1 The tunnel panel joints and outside corners will be covered by a trim strip for safety and provide a suitable appearance.
- 10.3.2 Diverter panels will be installed inside the tunnel approximately 10'-0" apart to add turbulence to the air.
- 10.3.3 Structural steel is included, where required for support of tunnel roof, conveyor and fans.

10.4 System Data

- 10.4.1 The tunnel will be supplied with a 48" Vane Axial Fan designed to pressurize the tunnel for cleanliness.
- 10.4.2 The pressurization will be from the Vane Axial fan mounted on a bridge type supply plenum to introduce air thru filters on both sides of the product.

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- 10.4.3 There will be a summer / winter mixing box after the fan to direct the air either inside or outside the plant on the supply and exhaust ends.
- 10.4.4 The tunnel will be supplied with a 48" Vane Axial Exhaust Fan designed to remove by-products. The airflow will be counter to the product flow (pressurization at the exit and exhaust at the entrance). Exhaust rate will be 10% greater than pressurization. The velocity will be approximately 200 fpm past the product.
- 10.4.5 There will be a summer / winter mixing box after the fan to direct the air either inside or outside the plant.
- 10.4.6 The exhaust and supply fans include elbow, transition, 20'-0" of exhaust stack each, roof collar with flashing, a stack termination cap and intake hood.

10.5 Pressurization / Exhaust System Data

Pressurization		Exhaust	
Quantity	(1) one	Quantity	(1) one
cfm Rate	44,000	cfm Rate	48,400
Static Pressure	0.5"	Static Pressure	0.5"
Motor Horsepower	20 hp	Motor Horsepower	20 hp

10.6 Access Platforms

- 10.6.1 Pneu-Mech Systems to design, fabricate and install two (2) access platforms with ladder and guard rail to access the two fans. Platforms to be designed for a 300 lb per sq. ft. load.

11 POWER and FREE OVERHEAD CONVEYOR SYSTEM

Product Description:	Short Weldment	Long Weldment
Length:	12'-0" (Parallel to Travel)	25'-6" (Parallel to Travel)
Width:	8'-0" (Perpendicular to Travel)	8'-0" (Perpendicular to Travel)
Height:	12'-0"	12'-0"
Product Weight:	7,000.0 Lbs.	14,000.0 Lbs.
Carrier/Hook Weight:	100.0 Lbs.	150.0 Lbs.

Note that the overall dimensions stated account for the entire product/carrier window.

SEQUENCE OF OPERATION:

OPERATION	SHORT PRODUCT	LONG PRODUCT
Load #1	3.3 Minutes per Cycle w/ Lift (Estimated time to load: 1.3 Minutes)	NA

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Load #2	3.1 Minutes per Cycle w/ Lift (Estimated time to load: 1.1 Minutes)	NA
Load #3	NA	4.0 Minutes per Cycle (Estimated time to load: 2.0 Minutes)
Washer	Speed: 10.5 FPM	Speed: 10.5 FPM
Blow-off/Vacuum Platform	As required for production	As required for production
Dry-Off Oven	30.0 Minutes	30.0 Minutes
Cool-Down #1	15.0 Minutes	15.0 Minutes
Masking Area	As required for production	As required for production
Powder Booths #1, #2 & #3	Speed: 10.5 FPM	Speed: 10.5 FPM
IR Oven	2.0 Minutes	2.0 Minutes
Cure Oven	45.0 Minutes	60.0 Minutes
Cool-Down #2	22.0 Minutes	22.0 Minutes
Unload #1	3.3 Minutes per Cycle w/ Lift (Estimated time to load: 1.3 Minutes)	NA
Unload #2	3.1 Minutes per Cycle w/ Lift (Estimated time to load: 1.1 Minutes)	NA
Unload #3	NA	4.0 Minutes per Cycle (Estimated time to load: 2.0 Minutes)

MATERIAL LISTING(S):

Quantity	FT/EA	Part Number	Description
			Actuator Plastic
40	EA	32385	Plastic Momentary Limit Switch Actuator (LESS Limit Switch)
50	EA	32423	Plastic Maintained Limit Switch Actuator 18" Long (LESS Limit Switch)
			Actuator Steel
20	EA	TBD	Steel Momentary Fiber Optic Actuator 18" Long for 0.3125 Diameter Fiber Optic Cables (LESS Fiber Optics) RE: 144443

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10	EA	144443	Steel Maintained Fiber Optic Actuator 18" Long for 0.3125 Diameter Fiber Optic Cables (LESS Fiber Optics)
120	EA	32170	6" S-N-F Channel Clamp
			Anti-Backup
60	EA		6" Free Line Anti-Backup Assembly, Right Hand
60	EA		6" Free Line Anti-Backup Assembly, Left Hand
12	EA		6" Free Line Anti-Backup Assembly, Right Hand (For Oven Use)
24	EA		6" Free Line Anti-Backup Assembly, Left Hand (For Oven Use)

Quantity	FT/EA	Part Number	Description
			Overhead P&F Chain - 4" Drop Trolleys, F13140 Side Link Pusher
1020	EA		S4-X678 Chain Assembly for 466 Wide-Wing Systems Trolleys LESS Caps & Seals w/ #13140 Pusher Assembled on 48" centers (Strand Length: 96") ALLOCATIONS: Conveyor #1: 2,054'-0" Conveyor #2: 2,574'-0" Conveyor #3: 2,271'-0" Conveyor #4: 526'-0" Conveyor #5: 194'-0" Conveyor #6: 194'-0" Conveyor #7: 194'-0"
			Chain Transfer
5	EA		466 Wide-Wing 36" Radius x 30 Degree Right Hand Chain-to-Chain Transfer, 15" Drop (Unit Length: 120")
7	EA		466 Wide-Wing 36" Radius x 30 Degree Left Hand Chain-to-Chain Transfer, 15" Drop (Unit Length: 120")
			4/6 Drive Assemblies

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4	EA	947170	UniFrame S4 X-678 Rotary Constant Speed Caterpillar Drive Assembly 3,000.0 lb. Chain Pull Capacity c/w 1.5 HP, 230/460 Volt AC, TEFC Inverter Duty Gearmotor, 5:1 Turn-down Ratio, 460 Volt AC Brake and Limit Switch Overload Protection, Set @ 3-7/16" Drop, Speed 15.7 FPM @ 60 HZ (Note: Drive is LESS controls. Brake to be wired separately when used with inverter.)
3	EA	947198	UniFrame S4 X-678 Rotary Constant Speed Caterpillar Drive Assembly 4,000.0 lb. Chain Pull Capacity c/w 7.5 HP, 230/460 Volt AC, TEFC Inverter Duty Gearmotor, 5:1 Turn-down Ratio, 460 Volt AC Brake and Limit Switch Overload Protection, Set @ 3-7/16" Drop, Speed 49.2 FPM @ 60 HZ (Note: Drive is LESS controls. Brake to be wired separately when used with inverter.)
			Expansion Joint
17	EA		466 Wide-Wing Oven Expansion Joint, 15" Drop (Unit Length: 40")

Quantity	FT/EA	Part Number	Description
			Free Line Track
10	EA		6" Freeline Track Assembly (Unit Length: 240")
2	EA		6" Free Line Trolley Installation Gate (Unit Length: ??")
			Free Line Horizontal Turns
1	EA		48" Radius x 45 Degree 6" Freeline Horizontal Turn
			Load & Tow Bars
122	EA	RE: DWG P-2R05	Load Bar for 114" c/c Trolleys
244	EA	RE: DWG P-2R05	Intermediate Load Bar for 28" c/c Trolley (Designed for Tandem Connection)
			P&F Track
220	EA		466 Wide-Wing P&F Straight Track, 15" Drop (Unit Length: 240")

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1	EA		466 Wide-Wing P&F Lubricator Track Section, 15" Drop
			P&F Horizontal Turns
23	EA		466 Wide-Wing 48" Radius x 45 Degree P&F Roller Turn, 15" Drop
1	EA		466 Wide-Wing 48" Radius x 45 Degree P&F Roller Turn w/ P280226 High Temperature Roller Turn Rollers, 15" Drop
20	EA		466 Wide-Wing 72" Radius x 90 Degree P&F Roller Turn, 15" Drop
1	EA		466 Wide-Wing 72" Radius x 90 Degree P&F Roller Turn w/ P280226 High Temperature Roller Turn Rollers, 15" Drop

Quantity	FT/EA	Part Number	Description
			P&F Switches (45 Degree)
6	EA		466 Wide-Wing 24" Radius x 45 Degree Right-Hand POS Unload Switch c/w 24"-36" Radius x 90 Degree Segmented Roller Turn Spur
2	EA		466 Wide-Wing 24" Radius x 45 Degree Right-Hand POC Load Switch c/w 24" Radius x 45 Degree Segmented Roller Turn Spur
1	EA		466 Wide-Wing 24" Radius x 45 Degree Right-Hand POC Unload Switch c/w Stub-Out for 36" Radius x 180 Degree Roller Turn Spur
5	EA		466 Wide-Wing 24" Radius x 45 Degree Left-Hand POS Load Switch c/w 24"-36" Radius x 90 Degree Segmented Roller Turn Spur
1	EA		466 Wide-Wing 24" Radius x 45 Degree Left-Hand POS Unload Switch c/w 24"-36" Radius x 90 Degree Segmented Roller Turn Spur
1	EA		466 Wide-Wing 24" Radius x 45 Degree Right-Hand POC Load Switch c/w STUB-OUT for 36" Radius x 180 Degree Powered Spur & High Temperature Rollers
1	EA		466 Wide-Wing 24" Radius x 45 Degree Right-Hand POS Load Switch c/w 24"-36" Radius x 90 Degree Segmented Roller Turn Spur
1	EA		466 Wide-Wing 24" Radius x 45 Degree Left-Hand POC Unload Switch c/w 36" Radius x 90 Degree Powered Spur

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3	EA		466 Wide-Wing 24" Radius x 45 Degree Left-Hand POC Unload Switch c/w 36" Radius x 45 Degree Powered Spur
1	EA		466 Wide-Wing 24" Radius x 45 Degree Left-Hand POC Load Switch c/w 36" Radius x 45 Degree Powered Spur
1	EA		466 Wide-Wing 24" Radius x 45 Degree Right-Hand POS Load Switch, No Spur
1	EA		466 Wide-Wing 24" Radius x 45 Degree Left-Hand POS Unoad Switch, No Spur
12	Sets		Switch Cylinders c/w Mounting Hardware
1	Set		Switch Cylinder c/w Viton High Temperature Seals & Mounting Hardware
1	EA		Vertical Actuator for Remote Operation of Switch
13	EA		Valve Board Assembly for Air Operated Switches & Pushers with (24VDC) DOUBLE Acting Solenoid RE: 267551

Quantity	FT/EA	Part Number	Description
			Power Only Horizontal Turns
16	EA		S4 36" Radius x 30 Degree Roller Turn Assembly with Tapped Segment Bars, 3-7/16" Drop
28	EA		S4 36" Radius x 45 Degree Roller Turn Assembly with Tapped Segment Bars, 3-7/16" Drop
4	EA		S4 36" Radius x 60 Degree Roller Turn Assembly with Tapped Segment Bars, 3-7/16" Drop
33	EA		S4 36" Radius x 90 Degree Roller Turn Assembly with Tapped Segment Bars, 3-7/16" Drop
4	EA		S4 36" Radius x 150 Degree Roller Turn Assembly with Tapped Segment Bars, 3-7/16" Drop
			Power Only Straight Track
145	EA	18266	4" I-Beam, 1045 High Carbon Rail (Unit Length: 240")

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			Power Only Vertical Curves
36	EA		S4 144" Radius x 30 Degree Single Vertical Curve
			Stop Assemblies & Related Equipment
21	EA		466 Wide-Wing Air Operated Rolling Stop Assembly, Right Hand (LESS Cylinder)
22	EA		466 Wide-Wing Air Operated Rolling Stop Assembly, Left Hand (LESS Cylinder)
43	Sets		Stop Cylinders c/w Mounting Hardware
7	Sets		Stop Cylinder c/w Viton High Temperature Seals & Mounting Hardware
7	EA		Vertical Actuator for Remote Operation of Stop
50	EA		Valve Board Assembly for Air Operated Stops with (24VDC) SINGLE Acting Solenoid RE: 267550

Quantity	FT/EA	Part Number	Description
			Power Only Take-ups
7	EA		S4-678 48" Pitch Diameter x 180 Degree Roller Bearing Traction Wheel Take-up Assembly, Air Operated c/w Safety Chains (48" Spread, 30" Travel) (LESS Cylinder)
7	Sets		Take-up Cylinders c/w Mounting Hardware
7	EA		Valve Board Assembly for Air Operated Take-ups RE: 254823
			Freeline Trolleys
122	EA		6" Wide-Wing Dog Magic Front Trolley c/w Full Complement Bearing Wheels (LESS Caps & Seals) Assembled with Load Bearing Hook/Lug for use with Tandem Load Bar Connection
244	EA		6" Wide-Wing Rear Trolley Assembly c/w Side Plates, Rear Cam, 2" Diameter Double Sided Tripper Pin, Full Complement Bearing Wheels (LESS Caps & Seals)

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122	EA		6" Wide-Wing Intermediate Trolley Assembly c/w Side Plates, Full Complement Bearing Wheels (LESS Caps & Seals)
			Trolley Hardware
976	EA		Hardened Thrust Washer for use in Finishing Systems
122	EA		466 Dog Magic Trolley Carrier Pin Bolt Assembly
366	EA		466 Carrier Pin Bolt Assembly
244	EA		Carrier Connector Pin
488	EA		Carrier Connector Pin
			Yokes
120	EA		466 Wide-Wing Full Yoke, 15" Drop w/ Bolt Hole Pattern

Quantity	FT/EA	Part Number	Description
			Specialty Equipment
4	EA		Load/Unload Truss-Type Lift Carriage (Short) c/w: On Board Shuttle Conveyor, TBD HP Motor Floating Carriage Capacity: 8,500.0 Lbs. Bank Length: 13'-6" Entrance Track Section Exit Track Section
2	EA		Load/Unload Truss-Type Lift Carriage (Long) c/w: On Board Shuttle Conveyor, TBD HP Motor Floating Carriage Capacity: 17,000.0 Lbs. Bank Length: 27'-2" Entrance Track Section Exit Track Section

Furnish and install angle iron steel support hangers and sway bracing from roof steel. Furnish required beam clamps. Furnish all rental equipment required to install conveyor and drop steel.



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12 SMART EYE SYSTEM

Pneu-Mech Systems to provide materials, installation and equipment to install a Smart Eye System on the conveyor load bars with photo-eye sensors. System consists of Smart Eye Sender / Receiver Components. **Note: Final design to be developed during engineering with the Crown project team.**

13 CRASH PROTECTION

Pneu-Mech Systems to design, fabricate and install a part crash protection system. The system will consist of a metal framework to hold light curtain sensors that will detect the part. All mounting hardware and cables will be included.

14 ROBOT INSTALLATION

Pneu-Mech Systems to provide mechanical and electrical installation for six (6) Fanuc P250 Robots. Includes safety barriers, light curtains, interlocks and e-stops. **Detailed pricing for mechanical and electrical installation to be determined after a robot vendor is selected.**

15 25 GPM REVERSE OSMOSIS SYSTEM

A 25 GPM RO System will be installed to feed stage 4.

All membranes, housings, high pressure pump, flow meter, conductivity meter, pre-filter, PLC control with touchscreen interface, stainless steel frame, PVC piping are included to feed stage 4. A 2,500 gallon holding tank will be installed as well.

16 Ph BALANCE SYSTEM with ENVIRONMENTAL PACKAGE

Pneu-Mech Systems to provide materials, field labor and equipment to install two (2) 3,500 gallon storage tanks, two (2) air operated diaphragm pumps, all piping and fittings included.

This system will allow neutralization of washer overflow prior to release to sewer.

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17 TWO (2) SIDE DOWN DRAFT PAINT PRODUCTION SPRAY BOOTHS WITH MAKE-UP AIR UNITS

Pneu-Mech Systems to design, fabricate and install two (2) Side Down Draft Dry Filter Spray Booths designed to collect overspray and provide a safe environment for spray operator.

Information below is for one (1) booth, two (2) booths are required.

17.1 Design Data

Booth Width	20'-0"
Booth Depth	40'-0"
Booth Height	22'-0"
Design Velocity	60 fpm (recommended for a side down draft booth) (cross draft booths = 70 to 100 fpm, down draft booths 50 to 70 fpm)
Lights	(24)

17.2 Filtration

- 17.2.1 Supply: 20"x20" Tacky Filters, Exhaust: 20"x20" Bag Filter & Roll Media.
Filters by others.
- 17.2.2 Dry type paint arrestor spray booths are available in several different models. They are used for removal of airborne paint particles from the exhausted air by means of disposable filters. Booth requires regular schedule of filter media replacement.

17.3 Dry Booth General Data

- 17.3.1 All maintenance and cleaning operations are performed from the front inside face area of the booth with filter media designed for easy removal.
- 17.3.2 Furnish a Dwyer Manometer mounted on booth side wall panel. This gauge will monitor pressure drop across the filters, signaling operator to change the dirty filters.

17.4 Lighting

- 17.4.1 Lighting for booth is supplied by LDPI Company using heavy-duty, vapor tight units, Series 400 with (4) LED Fluorescent Lamps, complete with clear tempered plate glass cover. Lamps are rated Class 1, Division 2, certified by NFPA. Vapor-tite listed as "enclosed and gasketed" by UL.

17.5 Material Specification

- 17.5.1 Booth shell to be fabricated from 16 ga. galvanized sheet steel. NOTE: If booth requires painting, aluminized or galvalume metal may be substituted for an additional charge.
- 17.5.2 Exhaust ductwork to be fabricated from 18 ga. galvanized sheet steel.

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17.6 Exhaust System

- 17.6.1 The booth will be supplied with 30" Tube Axial Exhaust Fans designed to produce a high velocity airflow for collection of overspray.
- 17.6.2 Each exhaust fan includes transition, 20'-0" of exhaust stack, roof collar with flashing and a stack termination cap.

17.7 Exhaust System Data

Quantity	(4) four	Motor Horsepower	5 hp
Exhaust cfm Rate	12,000	Fan and Stack Size	30" Ø
Static Pressure	0.75"	Total cfm	48,000

17.8 Make-Up Air Unit Data

- 1- Titan Air Model-TA-227-NG-VRH** Direct Fired Make up Air Heater
48,000 CFM @ approximately 0.75" wc. ESP
30HP - 460V-3-60 ODP motor- Single speed with fixed drive.
70° F. Temperature rise or 3,696,000 BTU/hr. with 5-PSI Natural gas inlet.
Vertical design with horizontal discharge for outdoor mounting.
Includes standard 3 ft. stand. (Additional stand height is optional)

Includes the following standard and optional equipment.

ETL listed. (ANSI Z83.41999 / CSA 3.7 M99 standards)
Pre-Piped, Pre-Wired and factory tested. Remote Summer-Winter-Off Selector switch
G-90 Galvanized casing. Insulated blower section. Hinged and gasketed service doors.
Non-Fused door interlock disconnect switch.
DWDI forward curved industrial blower with solid shaft.
FM approved gas train and controls for up to 5-PSI gas inlet pressure
Fully modulating gas burner with duct discharge air controller.
Fresh air V-Bank filter section with linked panel filters
Motorized 2-position discharge dampers.
Inlet ductstat for warm weather burner cutoff. High gas pressure switch.

17.9 Supply Ductwork

- 17.9.1 Design, fabricate and install supply ductwork. Ductwork to include up to 30'-0" of straight duct, two (2) 90° elbows and wall flashing.
- 17.9.2 Ductwork is fabricated from 18 ga. galvanized sheet steel.

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18 INSTALLATION FOR FOUR (4) POWDER BOOTHS

Pneu-Mech Systems is pleased to offer the installation package required to install four (4) Powder Booths. The complete package includes the necessary mechanical, electrical and pneumatic labor and materials required to install the powder booths supplied by others as detailed below.

18.1 Scope of Work

- 18.1.1 Unload and rig material in place of the major components delivered per agreed upon schedule.
- 18.1.2 One pre-installation survey trip to review customer job site with representative of the powder booth manufacturer
- 18.1.3 Provide necessary rental equipment needed to complete installation
- 18.1.4 Mechanical erection and assembly of booth and materials as supplied by booth manufacturer.
- 18.1.5 Installation of electrical components and control panels supplied by booth manufacturer
- 18.1.6 Provide electrical interconnections between supplied electrical sub-panels and prewired components (not including main power feeds)
- 18.1.7 Install encoder on existing conveyor system, as supplied by booth manufacturer (within 100 feet of powder booth).
- 18.1.8 Plumb necessary pneumatic lines to booth and supplied air dryer (by others) within 100 feet of powder booth.
- 18.1.9 Pneu-Mech Systems will provide a qualified startup support person on site for a period of 3 days to work with Powder Booth Manufacturer personnel to commission the system.
- 18.1.10 General clean-up of work area upon completion of installation

18.2 Items not included in the Pneu-Mech Systems Scope of Work

- 18.2.1 On-site Project Management supplied by Powder Booth Supplier.
- 18.2.2 Sprinkler and other Fire Suppression piping design and installation.
- 18.2.3 Preparation of job site for installation including but not limited to building modifications
- 18.2.4 All necessary painting, unless otherwise noted
- 18.2.5 Provide for removal and disposal of shipping materials
- 18.2.6 Main power feed connection to electrical panels
- 18.2.7 Any ductwork or other sheet metal not supplied by powder booth supplier, unless otherwise noted.



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- 18.2.8 Note- Pneu-Mech Systems can provide this at additional cost based on amount of duct required.
- 18.2.9 Any equipment, installation and utilities necessary to fulfill your Life Safety Plan.
- 18.2.10 Powder Booth calibration or application training.
- 18.2.11 Any required local or state permits, fees or P.E. stamped drawings.
- 18.2.12 Receipt and storage of miscellaneous drop shipped component shipments.

19 ELECTRICAL DISTRIBUTION WIRING

Furnish all electrical distribution wiring from furnished control panels to electrical devices and motors. All conduit will be EMT and all wire to be THHN stranded wire.

All electrical wiring will be installed according to the National Electrical Codes and in a neat and professional manner.

20 PLC CONTROLS

20.1 Components

A pre-wired NEMA 12 Electrical Control Cabinet will be installed. **All Control Panels are ETL certified.**

Operators will use a 15" color touch screen to control and monitor the system.

- Main Breaker with Disconnect Handle.
- PLC with Expansion Modules and Ethernet.
- Color Touch screen with Ethernet
- 8 port Ethernet Switches
- UL508A Type E Motor Starters Soft Starts
- AC Drives with Ethernet
- Honeywell Flame Control Packages with PID Temperature Control
- 30MM Pushbuttons, Indicators and Switches
- Red, Amber and Green Stacklight Assemblies with Sounders
- Remote Pushbutton Enclosures (Conveyor & E-Stops)
- 20 x 24 x 8 Junction Boxes with remote I/O modules.
washer stages will include a 12 x 12 x 6 junction box w/ remote I/O module
- UL489 Circuit Breakers
- UL1077 Supplementary Protectors

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- Control Transformer
- Relays
- IFM Efector Operating Solution Level Sensors
- IFM Efector Low Solution Level Sensors
- Terminal Blocks, Anchors, Separators, and Din Rail
- Panel Air Conditioners standard when VFD's are included
- Industrial Remote Gateway – Used for remote Connection to Panel for updating & troubleshooting

20.2 Operator Touch Screen Panel

Standard Touch Screens include the following:

- System Management
- Washer Manual / Auto Operation
- Oven Manual / Auto Operation
- Conveyor Manual / Auto Operation
- I/O Inputs and Outputs
- Fault and Fault History Screens
- Data Trending
- Electrical Drawings
- Operators Manual

20.3 Temperature Controllers

The heated washer stages and oven temperatures are controlled by the PLC with PID Temperature Control. This Control allows the operator a visual of all operating temperatures of equipment and the ability to input different temperature requirements as needed.

20.4 Flame Controller

A Honeywell RM7895-B-1014 fail-safe electrical device that is designed to operate fuel-fired equipment in a safe manner will be installed. Flame controllers incorporate dedicated circuits designed for fail-safe operation. *According to code, fuel fired equipment cannot be operated via a PLC or a PC but it can be and is monitored by the PLC.*

20.5 High Limit

All gas burners are equipped with a High Temperature Limit device that monitors the temperature of the burner. This fail-safe electrical device has an adjustable temperature set point.



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Washer burners use the Honeywell Aquastat located at the tank. Oven burners use the Honeywell UDC1200 mounted in the remote I/O enclosure.

21 PROJECT MANAGEMENT

A project manager will coordinate all work and will report progress to Crown Equipment. Any changes made to the scope by Pneu-Mech or Crown Equipment will be documented by the project manager and will be included in the reports.

The project manager will follow the Crown Equipment Design Change Order (DCO) requirements specified in the Crown Equipment Bid Package.

22 RIGGING AND RENTAL EQUIPMENT

Pneu-Mech Systems will provide all the rental equipment and be present to unload all major components and rig them into place. Crown Equipment will unload standard products on pallets and store them prior to our crew arrival. *Every attempt will be made to utilize equipment manufactured by Crown Equipment where possible.*

23 DOCUMENTATION

Furnish preventative maintenance schedules, spare parts list and complete set of drawings and service manuals in electronic format.

Note: A sample spare parts list is attached to this proposal. A dedicated list will be developed as part of the engineering process and provided within 60 days of approval of design. This will allow adequate lead time to order parts and receive parts prior to system start up.

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24 START-UP, TRAINING and SUPPORT

Furnish twenty (20) days of start-up assistance, training and production support once system is operational. Crew size will vary based on required support.

Crown Equipment must be ready in all phases for proper start-up and training in the following areas:

- Employees on site who will run the system
- Product with hangers to run on the system
- Completed utilities to all equipment
- Washer to be charged with chemicals
- Powder Booths Operational with powder available to spray

If any of these conditions are not met and a proper start-up and training is not completed, any additional start-up and training will be scheduled with a change order for the additional cost associated for another trip to the jobsite.

Product Service Metrics:

1. Maximum Response Time – Phone Technical Support
 - a. Pneu-Mech Offers 24-hour emergency service capability with call response in less than one hour.
 - b. Pneu-Mech offers remote system monitoring capability so troubleshooting can begin as soon as an issue is reported.
2. Maximum Response time for onsite technical response
 - a. Pneu-Mech Systems can provide on-site service response in 12 hours or less for emergency service.
3. Deployment of technical service nearest Crown facility.
 - a. Cincinnati, OH – 1.5 hours
 - b. Beckley, WV – 4.5 hours/Service Vehicle
 - c. St. Louis, MO – 5.5 hours/Service Vehicle
 - d. Statesville, NC – 7.5 hours/Service Vehicle
 - e. Remote System Monitoring – immediate availability



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25 TERMS

Delivery of Equipment for Installation

See attached schedule.

Freight Charges

Included in total cost.

Payment Terms

Negotiated monthly progress payments.

Warranty

2 year warranty will apply on all equipment manufactured by PNEU-MECH SYSTEMS MFG. LLC. Standard manufacturers' warranty will apply on all buy-outs. (Components only)

Design Notation

Pneu-Mech Systems Mfg. LLC practices a policy of continuous improvement in product design and construction. We reserve the right to alter specifications at any time with written approval from Crown Equipment.

ANY RESULTANT CONTRACT FOR EQUIPMENT AND/OR SERVICES IS SUBJECT TO PNEU-MECH SYSTEMS TERMS AND CONDITIONS OF SALE

Sincerely,

J. B. Graves (Regional Sales Manager)

Jason Gatton (Special Projects Manager)

Jerry Trostle (Vice President of Sales)

ms

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26 CUSTOMERS RESPONSIBILITIES

26.1 Electrical

Furnish power feed from plants main power supply to the following locations:

- Main System Control Panel
- Infrared Control Panel
- Blast Room Breaker Box
- Environmental Room Breaker Box
- HVAC System (by others)
- Powder Booth Control Panel/Air Dryer
- Powder Collector / Gun System
- RO Water System

26.2 Sprinkler and Fire Suppression

Sprinkler piping or fire suppression system design and installation.

26.3 Gas Piping

Gas line piping to gas trains.

26.4 Air Lines

Air lines as required.

26.5 Water Piping

Furnish water line piping as required.

26.6 Life Safety Plan

Any equipment, installation and utilities required to fulfill your Life Safety Plan.

26.7 Miscellaneous Requirements

- Any required local or state permits, fees, and P. E. stamped drawings.
- Product hangers or fixtures.
- All pit/concrete work along with any building modifications.
- Wall openings required.
- Roof curbs and roof openings required.
- Permanent sealing around new roof curbs and flashing.
- Furnish floor drains as required.
- Exhaust air make up unit and ductwork.
- Pump piping to neutralization system or sewer.
- HVAC System for E-Room.

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I have read and understand My Responsibilities required for an operational system as outlined in the section above.

Signature _____ Dated _____

Title _____

**PNEU-MECH SYSTEMS MFG, LLC
201 PNEU-MECH DRIVE, STATESVILLE, NC 28625
TELEPHONE 704-873-2475 FAX 704-871-2780**

TERMS AND CONDITIONS OF SALE

DEFINITIONS:

- A. **SELLER:** Pneu-Mech Systems Mfg., LLC, 201 Pneu-Mech Drive, Statesville, NC 28625.
- B. **BUYER:** _____.
- C. **CONTRACT:** Seller's Terms and Conditions of Sale, any proposal issued by Seller, and any technical or commercial specifications agreed to by Seller.
- D. **EQUIPMENT:** All or any part of the goods, work and services to be provided by Seller under the Contract.
- E. **NOTICE:** A written statement sent by registered or certified mail to either party at the address cited above, effective upon receipt.

LIMITATIONS ON CONTRACT TERMS:

Seller's proposal is an offer stating the terms and conditions under which Seller will enter into a contract with Buyer to provide the Equipment. This offer expressly limits acceptance to the complete technical and commercial terms stated therein. Additional or different terms which Buyer submits to Seller, either in a purchase order, letter of authorization, or other communication of acceptance, will have no force and effect unless specifically agreed to in writing by Seller. An offer by Buyer can only be accepted in writing by an authorized officer of Seller. In no event shall Seller's performance constitute acceptance of any terms and conditions different from those set forth in Seller's proposal. Any additional performance by Seller is only as an accommodation to Buyer.

PAYMENT TERMS

- A. Payment shall be made in full within thirty (30) days from notice of readiness to ship, unless a progress payment schedule has been established. Equipment orders are f.o.b. shipping point. The Seller reserves the right to change the terms of payment to sight draft, COD, or confirmed irrevocable letter of credit if, in the Seller's sole judgment, the financial conditions of Buyer has changed prior to the time of shipment. Seller may change interest at the rate of 1 1/2% per month on any past due balance.
- B. If shipment of Equipment is delayed due to Buyer's failure to promptly inspect, to give shipping instructions, or to discharge any duty necessary for delivery, payment shall become due as if shipment had been made. In any such case, the Buyer shall, in addition to the price, pay reasonable storage charges. Risk of loss during storage shall be borne by Buyer.
- C. Seller shall have the option of billing for partial shipments on a pro-rata basis.
- D. Prices on Equipment manufactured by Seller are firm for shipments to be made within six (6) months from date of Contract. Any delay in shipment beyond that time which is not a fault of Seller shall result in an adjustment in price to coincide with Seller's prices in effect at the time of shipment. Identical terms apply to prices for labor and miscellaneous materials.
- E. Prices of Equipment not manufactured by Seller are subject to adjustment in direct proportion and percentage to any increase in price to Seller by its supplier, unless specifically guaranteed otherwise in writing.
- F. When Equipment is installed and ready for start-up, all payment obligations of Buyer immediately become due. This provision specifically prevents Buyer from withholding payment because of non-performance of related work by other contractors. Seller agrees to permit Buyer to retain up to 5% of the Contract price, for a period not to exceed 90 days, while awaiting performance by others.

PERFORMANCE TESTS:

- A. Any contract obligation regarding performance test of the Equipment shall be satisfied upon satisfactory completion of performance tests. Said tests must be run within thirty (30) days of the date of initial operation, or Equipment shall be deemed to be satisfactory. Performance tests shall be run in accordance with Seller's instructions, if any, and in conformance with the Contract specification loads and conditions. Subsequent to satisfactory completion of performance tests, Seller's responsibility shall be limited to the material and workmanship warranty established under the Contract.
- B. All labor and materials incident to conducting performance tests are the expense and responsibility of Buyer. If included in the Contract, Seller shall provide a service representative to advise and consult during testing.

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LIMITATION OF LIABILITY:

- A. **Damage Liability:** IN NO EVENT SHALL SELLER BE LIABLE FOR CONSEQUENTIAL, INCIDENTAL, SPECIAL, OR DIRECT DAMAGES OF ANY KIND, WHETHER IN NEGLIGENCE, STRICT LIABILITY, OR BREACH OF CONTRACT.
- B. **Indemnification:** Buyer shall indemnify and hold harmless Seller, its agents, representatives, and employees, from and against any and all suits, actions, legal or administrative proceedings, claims, demands, damages, liabilities, interest, attorney's fees, costs and expenses of any nature whether arising before or after completion of the work hereunder and in any manner directly or indirectly caused, occasioned, or contributed to in whole or in part or claimed to be caused, occasioned, or contributed to in whole or in part, by reason of any act, omission, fault, or negligence, whether active or passive, of Buyer or of anyone acting under its direction or control or on its behalf in connection with or incident to the performance of the Contract. In no event shall Buyer's indemnity and hold harmless obligation apply to liability caused by the sole negligence or willful misconduct of Seller.
- C. **Third Party Rights:** Buyer shall bind subsequent buyers or lessees of the Equipment to the terms of this Contract such that said third parties shall have no further rights against Seller than does Buyer. Buyer agrees to notify said third parties of this provision and to make this a condition of any contract concerning the Equipment. In the event Seller is subjected to claims, losses, or damages beyond the limits set forth in the Contract, Buyer shall indemnify and hold harmless Seller from all such claims, losses, or damages.
- D. **Statute of Limitations:** Pursuant to North Carolina General Statute Section 25-2-725(1) (known as the Uniform Commercial Code), the statute of limitation is limited to twelve (12) months from the time a breach occurs.

LIMITED LIABILITY OF SELLER FOR FIELD WORK:

- A. Seller's field service personnel are authorized only to advise and consult with Buyer or its representative and are not authorized nor licensed to handle or operate the Equipment.
- B. At all times during which Seller's service representatives are performing services at the jobsite, whether related to preliminary operations, start-up, testing, or Equipment repairs, Buyer shall provide a supervisor to whom the representative shall report.
- C. In the event Seller field erects the Equipment utilizing its own construction labor, Seller shall provide a supervisor to direct said labor. The supervisor shall report to and be directed by Buyer's project engineer, or comparable individual, at the jobsite.

TAXES ARE NOT INCLUDED:

All federal, state, and local taxes are for Buyer's account and are in addition to prices quoted in this Contract, unless specifically set out and identified as a tax-related item. It is the duty of the Buyer to establish exemption to any taxes and to indemnify Seller if such information is incorrect.

PERMITS:

Where laws or municipal ordinances require permits to install the Equipment or require the approval of the plans of specifications for the Equipment or its installation, Buyer assumes the responsibility and expense for securing the required permit or approval. The expense of any changes which are required to meet the approval of the state or municipal authorities is for Buyer's account. Seller will assist Buyer by providing any necessary technical information to obtain any of said permits.

COMPLIANCE AT THE JOBSITE:

Seller does not warrant that the Equipment complies with laws, ordinances, regulations, insurance requirements, or local union rules or preferences in effect at the jobsite. Modifications in the Equipment which are required in order to comply with the same are at Buyer's expense. Seller accepts no responsibility for penalties or citations levied against Buyer by local, state, or federal authorities.

FORCE MAJEURE:

Seller shall not be liable for failure to deliver or for delays in delivery, construction, or erection of Equipment occasioned by causes beyond the control of Seller including, but not limited to, strikes, labor slowdowns, lockouts, fires, floods, riots, thefts, accidents, embargoes, acts of government, acts of God, unusually severe weather, inability to obtain shipping space, machinery breakdowns, delay of carriers or suppliers, and governmental acts or regulations. In the event of any such delay, the time for performance shall be reasonably extended and an adjustment shall be made for additional costs to Seller.

RISK OF LOSS:

Risk of loss shall pass to Buyer upon delivery or tender of delivery of the Equipment to the carrier or to the jobsite, as the case may be. From the time risk loss passes to Buyer until final payment, Buyer shall carry "all risk" insurance in the name of Buyer and Seller, as their interests may appear, in an amount equal to the total Contract price.



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TRANSPORTATION CHARGES:

Buyer shall bear the expense of changes in transportation rates, taxes, or routing requirements after Contract formation but prior to delivery either to Seller or to the jobsite.

CANCELLATION:

Crown Equipment has the right to cancel the contract at any point in the process. Pneu-Mech Systems would invoice for all documented costs and expenses with reasonable profit incurred to the termination point of the contract.

CONFIDENTIAL INFORMATION OF SELLER:

- A. Any proprietary information received by Buyer from Seller (including, but not limited to samples, designs, concepts and drawings) remains the property of Seller. Buyer agrees to maintain as secret and treat as confidential all proprietary information supplied by Seller and may not disclose such information to a third party without prior written consent of Seller. Buyer may not use Seller's proprietary information in performing work for itself or any third party at any time. Buyer shall return to Seller all proprietary information upon demand and in no event later than the completion of the work under this Contract.
- B. In the event Buyer violates the terms of this provision, Buyer shall be liable for all damages directly or indirectly resulting from said breach, including, but not limited to, Seller's lost profits and injury to Seller's goodwill. Buyer and Seller recognize the difficulty of ascertaining such damages and agree that damages shall be presumed to equal 20% of the Contract price. Buyer furthermore agrees to inform all necessary third parties of its breach of this provision and that information said third party received is proprietary information of Seller.

MANUALS AND WARNINGS:

When Buyer acknowledges receipt of Seller's instruction manuals and warnings and those of Seller's vendors, Buyer accepts complete responsibility for ensuring that the same are distributed to and utilized by the Equipment Operators and that said individuals are properly trained to safely and completely operate the Equipment. Buyer agrees to indemnify and hold harmless Seller from any and all claims, losses, damages, or expenses arising from or in any way connected with Buyer's responsibility hereunder.

ATTORNEY'S FEES:

In addition to any other remedies provided by law, Buyer shall be liable for attorney's fees and litigation expenses which Seller reasonably incurs to enforce, interpret, or collect damages under any of the terms of the Contract.

PATENTS:

Where Buyer furnishes plans and specification, Buyer shall hold Seller harmless against any claims of any third party by way of patent infringement or proprietary information belonging to another which arises out of compliance with said specifications. Seller warrants that the Equipment shall be free of any such claims on all of its work and will hold Buyer harmless from any such claim in those cases where plans and specifications are provided by Seller.

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MATERIAL AND WORKMANSHIP WARRANTY:

- A. **SOLE EXPRESS WARRANTY:** SELLER WARRANTS THAT THE EQUIPMENT CONFORMS TO SELLER'S PROPOSAL AND ANY SPECIFICATIONS DIRECTLY INCORPORATED INTO THE CONTRACT. ANY EXPRESS OR IMPLIED REFERENCE TO PLANS AND SPECIFICATIONS OUTSIDE OF THE SPECIFIC SCOPE OF THE EQUIPMENT SHALL IN NO WAY ALTER OR ENLARGE SELLER'S RESPONSIBILITY UNDER THE CONTRACT. EQUIPMENT AND/OR SERVICES SUPPLIED BY OTHER VENDORS ARE EXCLUDED FROM SELLER'S WARRANTY AND ONLY CARRY SUCH WARRANTY AS PROVIDED BY THOSE VENDORS. SELLER AGREES TO ACT AS LIAISON FOR BUYER WITH THOSE VENDORS.
- B. **No Implied Warranty:** OTHER THAN TITLE, ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION THE IMPLIED WARRANTY OF MERCHANTABILITY AND THE IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, ARE EXCLUDED.
- C. **Length of Warranty:** Equipment manufactured by Seller is guaranteed against defects in materials and workmanship for one (1) year from the date of initial operation, not to exceed eighteen (18) months from the date of installation.
- D. **Exclusive Remedy:** In the event of a defect in material or Seller's workmanship, Seller's sole obligation is to repair, during normal working hours, or provide replacement parts, at its option, f.o.b. point of manufacture. Removal and reinstallation expenses and transportation charges are for Buyer's account. Repair or replacement does not alter or extend limits on liability and warranty established at sale. If Seller fails to so repair or replace, Seller's liability shall not exceed the contract price of the specific defective goods. It is agreed that there is not a breach of contract so long as Seller is willing to repair or replace defective equipment.
- E. **Conditions of Warranty:** Seller's warranty is conditional upon Buyer's (1) giving Seller notice of a defect within ten (10) days from the time it should have been detected; (2) giving Seller prompt and reasonable opportunity to inspect the Equipment; (3) operating the Equipment according to the manner prescribed by Seller without alteration or substitution to the Equipment; and (4) keeping adequate logs and records to establish proper Equipment operation. Proper operation includes, but is not limited to, proper erection, start-up, and equipment maintenance, avoidance of damage from abrasion, corrosion, or excessive temperature, and proper servicing of Equipment. Failure to comply with any of the above conditions voids this warranty.
- F. **Backcharges:** Buyer may not backcharge Seller for legitimate warranty claims without Seller's prior written consent since Seller has a duty to repair or provide replacement parts for the Equipment.
- G. **Specific Expectations:** Seller does NOT guarantee any of its equipment against abrasion, corrosion, excessive temperatures, misuse or erosion, unless specified otherwise in writing.

APPLICABLE LAW:

This Contract is made in Statesville, North Carolina, and irrespective of the place of performance, or otherwise, the Contract and all disputes or claims concerning any aspect of the Contract shall be construed and interpreted in accordance with the laws and decisions of the Courts of North Carolina.

COMPLETE AGREEMENT:

- A. This Contract constitutes a final written expression of all the terms of the agreement between Buyer and Seller and is a complete and exclusive statement of those terms.
- B. The terms of this Contract may not be modified or waived orally.
- C. In the event any provision, or part thereof, of this Contract is held to be unenforceable, the remaining provisions and parts thereof shall remain in full force and effect.

Seller

Buyer



Jerry Trostle (VP of Sales)
Pneu- Mech Systems LLC

Name _____

Title _____

Company _____